



2021 SR&ED tax cases

SREDStakeholder.CA

<u>SR&ED TOPIC</u>	<u>APPELLANT</u>	<u>PRIMARY ISSUE</u>	<u>WIN / LOSS</u>	<u>RULING & RATIONALE</u>	<u>IMPLICATIONS & OPPORTUNITIES</u>	<u>SIGNIFICANCE</u>
Technological eligibility						
Claims by Medical Prof. Corps.	Andre Lamy MPC	Whether Directly Engaged	Win	Work by Dr. on behalf of MPC	4 eligible project examples - 2 with sponsors	High
Software for marine travel	Indusol	Systematic Investigation (SI)	Lose + costs	No SI even though TU	Need to show progressive hypotheses	Moderate
Software for SR&ED claims	National R&D	Systematic Investigation (SI)	Lose + costs	No SI even though TU	Need to show progressive hypotheses	Moderate
Financial issues						
None to date						

Fiscal Year 2021

- 2101 - Andre Lamy MPC - Directly Engaged (WIN)
 - ▲ 1 - 4 SR&ED projects all eligible
 - 1 - Coronary project (2021)
 - 2 - Vision project (2021)
 - 3 - Compass project (2021)
 - 4 - Accelerate project (2021)
 - ▲ 2 - Whether "directly engaged"
 - 1 - Who performed the SR&ED? (2021)
- 2102 - Indusol - marine software & SI (LOSS)
 - ▲ 1 - 5 Questions - Technological Uncertainty vs. Systematic Investigation
 - 1 - Technological Uncertainty (TU) Existed (2021)
 - 2 - Lack of Systematic investigation (2021)
 - ▲ 2 - Financial issues
 - 1 - Tracking labour expenses (2021)
 - 2 - Software as material cost? (NO) (2021)
- 2103 - National R&D - software & SI (LOSS)
 - ▲ 1 - paging, sorting & indexing method
 - 1 - techniques for paging, sorting & indexing (2021)
 - ▲ 2 - develop pivot table mechanism
 - 1 - pivot output mechanism (2021)
 - ▲ 3 - stateful client control
 - 1 - deterministic and stateful client-side control (2021)

3 SR&ED tax cases - log
into "demo" at
WWW.RDBASE.CA

Older CA
Cases analyzed using
"key criteria"
&
"project description"
reports.

2101 - Andre Lamy MPC - Directly Engaged (WIN)					
BENCHMARKS	ACTIVITIES BY YEAR				
Similar prior in-house technologies: 5 products / processes Queries to experts: 2 responses	2021				
	'1-1	'1-2	1-3	'1-4	'2-1
	Coronary project	Vision project	Compass project	Accelerate project	Who performed the
OBJECTIVES	RESULTS				
On pump success for CABG: 100 %	92				
Off pump success for CABG: 100 %	87				
UNCERTAINTIES & KEY VARIABLES	CONCLUSIONS				
1 - 4 SR&ED projects all eligible					
Accelerate - effects of diabetes meds on bypass				Y	
Compass - effects Rivaroxaban on cardiac patients			Y		
Coronary - bypass on pump vs. off pump	Y				
Vision - troponin essay: cut-off & prognostics		Y			
2 - Whether "directly engaged"					
Directly or indirectly engaged?					Y
	METHODS				
Analysis	2				
Trials	600	15000	27000		
Prototypes					
Lines of code					
	COSTS				
Hours	500	120	180	150	
Materials \$					
Subcontractor \$					

Project Name: Andre Lamy MPC - Directly Engaged (WIN)
Project Number: 2101

Start Date: 2021-01-01
Completion Date: 2021-04-30

Project Details:

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
On pump success for CABG (%)	80	100	Yes
Off pump success for CABG (%)	78	100	Yes

[21] During the 2013 and 2014 taxation years, Dr. Lamy spent approximately 52 to 57 per cent of his time working on these four projects. He testified that he conducted all of his research as an employee of the Appellant.

The largest project (Coronary) involved developing and comparing techniques for Coronary Artery Bypass Grafting (CABG) with or without a pump.

STATEMENT OF AGREED FACTS

The Appellant and the Respondent, by their solicitors, agree to the following facts in the hearing of the above noted matter, in conjunction with any evidence called at the hearing which is not inconsistent with the below facts.

1. The Appellant was a corporation located in Ontario.
 2. The Appellant was incorporated on June 23, 2008.
 3. Dr. Lamy was the Director, President and Secretary of the Appellant.
 4. The Appellant was the medical professional corporation of Dr. Lamy and carried on the business of performing cardiac surgery, providing associated medical care to patients and researching improvements in cardiac surgical methodology and clinical [outcomes].
 5. Dr. Lamy was also employed as a Professor of the Faculty of Health Sciences at McMaster University where his teaching duties included lecturing on research methodology and the inclusion of students in cardiac surgery.
 6. During the 2013 and 2014 taxation years, Dr. Lamy was involved in experimental projects relating to advancements in cardiac surgical techniques and treatments. There were two studies known as the Vision study, that included projects referred to throughout as "Vision" and "Coronary", and the Compass study, that included projects referred to throughout as "Compass" and "Accelerate" (the "Projects").
 7. The Projects constituted scientific research and experimental development ("SRED") within the meaning of the Income Tax Act (the "Act").
 8. Careful SRED time tracking dockets were kept as required, and detailed representations and information packages regarding the Projects were prepared.
 9. Costs of the Projects were incurred. SRED tax credits in relation to those costs were claimed by the Appellant for its 2013 and 2014 taxation years in the amounts of \$93,828.00 and \$107,642.00, respectively, pursuant to subsection 248(1) of the Act.
 10. The Research Agreements leading to the Projects were signed by Dr. Lamy without noting his capacity as director of the Appellant.
- II. Dr. Lamy was not required by his employment agreement with McMaster University to undertake research within the meaning of subsection 248(1) of the Act.

Field of Science/Technology:

Cardiac and cardiovascular systems (3.02.04)

Project Details:

Intended Results: Develop new processes
Work locations: Research Facility

Project Name:	Andre Lamy MPC - Directly Engaged (WIN)	Start Date:	2021-01-01
Project Number:	2101	Completion Date:	2021-04-30
Key Employees:	Andre Lamy (Cariothoracic surgery - MD,PhD (2000) / Surgeon)		
Evidence types:	Design of experiments; Records of trial runs; 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; Project records, laboratory notebooks; Project planning documents		

Scientific or Technological Advancement:

Uncertainty #1: 4 SR&ED projects all eligible

All of the projects themselves were deemed eligible from a technology perspective.

The CRA's challenges instead related to the issues of whether Dr. Lamy was;

- 1) actually performing SR&ED on projects sponsored by other companies &
- 2) "directly" vs. "indirectly" engaged on each project.

The following is a brief summary of the activities related to each of the 4 projects:

The most significant underlying key variables are:

Vision - troponin essay: cut-off & prognostics, Compass - effects Rivaroxaban on cardiac patients, Accelerate - effects of diabetes meds on bypass, Coronary - bypass on pump vs. off pump

Technology or Knowledge Base Level:

Benchmarking methods & sources for citations:

Benchmark Method/Source	Measurement	Explanatory notes
Similar prior in-house technologies	5 products / processes	Dr. Lamy has published peer reviewed papers regarding the states of Compass project technology.
Queries to experts	2 responses	2 of the projects were sponsored and the protocols may have been fully or partially structured by the sponsor. This leverages the knowledge of the groups involved in defining the technological advancements (e.g. 600 investigators & 27,000 patients in Compass project)

Activity #1-1: Coronary project (Fiscal Year 2021)

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	2 alternatives
Trials:	600 runs / samples

Improve Coronary Artery Bypass Grafting techniques:

[17] With respect to the Coronary Project, he testified that it related to bypass surgery. He referred to two techniques that are used when conducting bypass surgery.

One is called a cardiopulmonary bypass, or the pump. This involves stopping the heart while the bypass is performed.

The second technique is called off-pump. A pump is not used and the bypass is performed while the heart is beating.

Dr. Lamy noted that there was much discussion in the medical community with respect to which technique is better. As a result, he decided that he would try to answer that question by starting the Coronary Project.

He has been working on the project for ten years and it is not yet completed. He worked on this project during the 2013 and 2014 taxation years.

Results:

Project Name: Andre Lamy MPC - Directly Engaged (WIN)
Project Number: 2101

Start Date: 2021-01-01
Completion Date: 2021-04-30

On pump success for CABG: 92 % (60% of goal)

Off pump success for CABG: 87 % (40% of goal)

ADDITIONAL DETAILS FROM INTERNET:

Dr. Lamy's most significant contribution in cardiac surgery is the CORONARY trial for which he received a large grant from the Canadian Institute of Health Research in 2007.

CORONARY is a large multi centred randomized trial of off-pump CABG surgery versus on-pump CABG surgery. CORONARY has recruited and randomized 4,752 patients from 79 centres in 19 countries.

The results were presented at the Late Breaking Clinical Trials at the American College of Cardiology meeting in 2012 and 2013 and were published in the New England Journal of Medicine in 2012 and 2013.

The trial recently finished with a follow-up of five years. These final results were published in the New England Journal of Medicine October 2016.

Conclusion:

[47] [the CRA conceded eligibility of the] Vision and Accelerate Projects.

However, the Respondent (CRA) argues that the documents provided with respect to the Coronary Project and the Compass Project are not consistent with a factual finding that the Appellant performed the SR&ED.

I (the judge) do not agree.

AUTHOR'S NOTE:

BECAUSE THE PROJECT WAS SPONSORED BY ANOTHER PARTY (CANADIAN INSTITUTE FOR HEALTH RESEARCH) THE CRA SCRUTINIZED WHETHER THE SPONSOR OR DR. LAMY WAS CONDUCTING THE SR&ED.

IN SUCH CASES IT IS IMPORTANT TO OUTLINE HOW;

- THE PERFORMER (DR. LAMY) PROVIDED INPUT INTO THE PROTOCOL DESIGN ITSELF VS.
- JUST PROVIDING DATA FOR THE SPONSOR TO INTERPRET & ANALYZE.

Significant variables addressed: Coronary - bypass on pump vs. off pump

Documentation:

Uploaded to RDBASE.NET: Dr. Andre Lamy Published reports on Coronary Project.pdf (153KB), Andre Lamy MPC SRED Tax ruling -WIN Directly Engaged.pdf (202KB)

Offline Documents: docs

Activity #1-2: Vision project (Fiscal Year 2021)

Methods of experimentation:

Method	Experimentation Performed
Trials:	15000 runs / samples

[18] The Vision Project involves identifying when a person has had a heart attack during cardiac surgery. The project involves 15,000 patients in eight or nine countries around the world. During the 2013 and 2014 taxation years, Dr. Lamy helped design the trials for the project.

ADDITIONAL DETAILS FROM INTERNET:

Dr. Lamy is currently involved with the VISION-Cardiac surgery trial, a prospective analysis of 15,000 patients around the world to determine the cut-off value and prognostic factor of the new generation of troponin essays after cardiac surgery.

Results:

Project Name: Andre Lamy MPC - Directly Engaged (WIN)
Project Number: 2101

Start Date: 2021-01-01
Completion Date: 2021-04-30

Conclusion:

[47] [the CRA conceded eligibility of the] Vision and Accelerate Projects.

Significant variables addressed: Vision - troponin essay: cut-off & prognostics

Activity #1-3: Compass project (Fiscal Year 2021)

Methods of experimentation:

Method	Experimentation Performed
Trials:	27000 runs / samples

[19] The Compass Project is a large trial project. Dr. Lamy was involved in a small portion of the project; that portion involved testing the medication Rivaroxaban with certain patients.

Dr. Lamy noted this his involvement related to the small portion of the test population who had undergone cardiac surgery. He worked on the project during the 2013 and 2014 taxation years and continues to work on the project today.

[28]Compass Project (the "Compass Letter of Understanding"). The letter is signed by the Hamilton Health Sciences Corporation (identified in the letter as "HHSC") and Dr. Lamy.

The purpose of the Compass Letter of Understanding appears to be to discuss HHSC's and Dr. Lamy's role in the Compass Project, which was sponsored and funded by Bayer Healthcare AG. Dr. Lamy noted that worldwide there were approximately 27,000 patients who participated in the Compass Project.

[29] The letter states that Bayer Healthcare AG has authorized Bayer Inc., a corporation with an address in Toronto, to act on its behalf regarding all matters related to the conduct of the study in Canada.

[30] The Compass Letter of Understanding indicates that Bayer Inc. has entered into a clinical trial service agreement with HHSC, pursuant to which HHSC is to manage the Compass Project, including supervising the investigators.

The letter refers to Dr. Lamy as being the "Principal Investigator." In his testimony, Dr. Lamy clarified that there were approximately 600 investigators involved in the Compass Project and that he was the local Principal Investigator, meaning he was the Principal Investigator for the patients in the Hamilton hospital.

[31] It appears that the role of the Principal Investigator was to pre-screen patients and then recruit qualifying patients for the project.

Appendix A states that the Principal Investigator shall carry out the "Study Activity". The Compass Letter of Understanding does not explain this term. It appears to relate to activities HHSC was required to perform under its agreement with Bayer Inc. I was not provided with a copy of that agreement.

[32] On the second page of the Compass Letter of Understanding it is stated that HHSC, on behalf of Bayer Inc., shall pay Dr. Lamy for the services provided in accordance with Appendix B to the letter of understanding.

Dr. Lamy testified that HHSC did not pay any amounts to either him or the Appellant in respect of the Compass Project. The only monies he received were the amounts paid to him by the Appellant as salary.

[AUTHOR'S NOTE: IF PAYMENTS HAD BEEN RECEIVED FOR THE RESEARCH THEY MAY HAVE BEEN "CONTRACT PAYMENTS" THAT WOULD REDUCE THE ELIGIBLE SR&ED EXPENSES.]

Results:

Conclusion:

[47] [the CRA conceded eligibility of the] Vision and Accelerate Projects.

However, the Respondent (CRA) argues that the documents provided with respect to the Coronary Project and the Compass Project are not consistent with a factual finding that the Appellant performed the SR&ED.

I (the judge) do not agree.

[AUTHOR'S NOTE: BECAUSE THE PROJECT WAS SPONSORED BY ANOTHER PARTY (I.E. BAYER PHARMACEUTICAL

Project Name: Andre Lamy MPC - Directly Engaged (WIN)
Project Number: 2101

Start Date: 2021-01-01
Completion Date: 2021-04-30

COMPANY / RIVAROBAXIN PRODUCER) THE CRA SCRUTINIZED WHETHER THE SPONSOR OR DR. LAMY WAS CONDUCTING THE SR&ED.

IN SUCH CASES IT IS IMPORTANT TO OUTLINE HOW;

- THE PERFORMER (DR. LAMY) PROVIDED INPUT INTO THE PROTOCOL DESIGN ITSELF VS.
- JUST PROVIDING DATA FOR THE SPONSOR TO INTERPRET & ANALYZE.]

Significant variables addressed: Compass - effects Rivaroxaban on cardiac patients

Activity #1-4: Accelerate project (Fiscal Year 2021)

Methods of experimentation:

[20] The last project, the Accelerate Project, was a trial that did not go well.

It was in relation to diabetes and bypass surgery medication. He worked on the project during the 2013 and 2014 taxation years. The project ended shortly after 2014.

Results:

Conclusion:

[47] [the CRA conceded eligibility of the] Vision and Accelerate Projects.

Significant variables addressed: Accelerate - effects of diabetes meds on bypass

Uncertainty #2: Whether "directly engaged"

The most significant underlying key variables are:

directly or indirectly engaged?

Technology or Knowledge Base Level:

Activity #2-1: Who performed the SR&ED? (Fiscal Year 2021)

Methods of experimentation:

The court examined contracts related to 2 of the projects.

[34] Dr. Lamy testified that he signed the Coronary Agreement and the Compass Letter of Understanding in his capacity as an employee of the Appellant, since he provided the services specified in the agreement and the Compass Letter of Understanding as an employee of the Appellant.

[36] As I noted previously, the issue before the Court is whether the Appellant carried out the SR&ED or whether Dr. Lamy conducted such research in his personal capacity. This is a question of fact.

[37] The Respondent (CRA) presented no witnesses in support of her factual conclusion that Dr. Lamy carried out the SR&ED in his personal capacity. In paragraph 10 of her Reply, the Minister states that

"in determining the Appellant's tax liability for the taxation years under appeal, the Minister relied on the following" Paragraph 10 of the Reply then continues with contains six subparagraphs numbered a) to f).

The only subparagraphs that support the Minister's argument that Dr. Lamy, and not the Appellant, conducted the SR&ED are subparagraphs 10 e) and f) of the Reply. These subparagraphs contain the following factual conclusions:

e) the SR&ED in question was undertaken by Dr. Lamy in his personal capacity; and

f) the SR&ED in question was not undertaken directly by the Appellant nor on behalf of the Appellant by Dr. Lamy.

[38] The Reply does not contain any assumptions of fact made by the Minister that support these two factual conclusions.

As a result, I will base my decision on the relevant evidence before me, namely, the testimony of Dr. Lamy, the admissions made by the parties, the facts contained in the SAF and three of the documents included in Exhibit AR-1. The remaining two

Project Name: Andre Lamy MPC - Directly Engaged (WIN)
Project Number: 2101

Start Date: 2021-01-01
Completion Date: 2021-04-30

documents in Exhibit AR-1, i.e., the notices of assessment for the relevant years, are not relevant to the issue of who, as a question of fact, carried out the SR&ED.

[52] That it was Dr. Lamy who signed the Coronary Agreement and the Compass Letter of Understanding does not change the fact that he performed the research activities as an employee of the Appellant.

Dr. Lamy acknowledged that he signed the Coronary Agreement and the Compass Letter of Understanding as Andre Lamy. He noted that this is how he signs all documents.

However, he stated that he signed the documents in his capacity as an employee of the Appellant, since he provided the services as an employee of the Appellant.

[53] Dr. Lamy's testimony is supported by the billings made for his medical services.

He bills the Government of Ontario for such services in his own name.

The Respondent does not challenge the Appellant's position that any monies received in respect of such services are received by Dr. Lamy for and on behalf of the person providing the service, i.e., his employer, the Appellant.

The result is the same with respect to the research activities: Dr. Lamy signed his own name on the contracts, but he provided the services as an employee of the Appellant.

Results:

[39] As I noted previously, Dr. Lamy testified that he performed all of his research activities as an employee of the Appellant. His testimony is consistent with the admissions made by the Respondent and the subjective evidence before me.

[43] Since Dr. Lamy is the only employee of the Appellant, clearly he is the only one conducting the business of the Appellant, namely performing surgery, providing care to patients and conducting medical research. In other words, if the Appellant carried out the research in question in these appeals, then Dr. Lamy had to perform the research work.

[54] The evidence before me is that from 2008 until the present time any activities of Dr. Lamy relating to the business of the Appellant, including researching improvements in cardiac surgery, were activities of his employer, the Appellant.

[44] The Employment Agreement specifically provides that Dr. Lamy shall not devote any of his time to any business other than the business of the Appellant. He testified that he complied with this provision and I received no evidence to contradict his testimony.

Conclusion:

[45] Dr. Lamy noted that the \$93,828 and \$107,642 claimed by the Appellant (i.e. his medical professional corporation) in the 2013 and 2014 taxation years respectively as SR&ED expenses represent salary that the Appellant paid to him for those years.

Dr. Lamy testified that the Appellant paid him the salary in consideration for his work on the four research projects. The Respondent accepts that the \$93,828 and \$107,642 were amounts spent on SR&ED.

[46] On the basis of these facts and the other evidence before me, I conclude that the Appellant performed the SR&ED.

Dr. Lamy physically performed his research as an employee of the Appellant.

Significant variables addressed: directly or indirectly engaged?

2102 - Indusol - marine software & SI (LOSS)				
BENCHMARKS	ACTIVITIES BY YEAR			
Similar prior in-house technologies: 2 products / processes	2021			
	'1-1	'1-2	'2-1	'2-2
	Technological Uncertainty (TU)	Lack of Systematic investigation	Tracking labour expenses	Software as material cost? (NO)
OBJECTIVES	RESULTS			
maximum draft: 8.15 m UKC "under-keel clearance": 30 cm				
UNCERTAINTIES & KEY VARIABLES	CONCLUSIONS			
1 - 5 Questions - Technological Uncertainty vs. Systematic				
How to measure velocity of current in real time				
Squat for vessels at differing speeds	Y			
Squat formula for different sections of channel	Y			
2 - Financial issues				
	METHODS			
Analysis Trials Prototypes Lines of code	50			
	COSTS			
Hours Materials \$ Subcontractor \$	800			

Project Name: Indusol - marine software & SI (LOSS)
Project Number: 2102

Start Date: 2021-01-01
Completion Date: 2021-07-30

Project Details:

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
maximum draft (m)	7	8.15	No
UKC "under-keel clearance" (cm)	50	30	No

INTRODUCTION

[1] Indusol Industrial Control Ltd. ("Indusol" or the "Appellant") filed an appeal for its 2012 taxation year.

[2] In so reassessing, the Minister of National Revenue (the "Minister") ... rejected Indusol's claim that expenses totalling \$111,883 were SR&ED as well as the investment tax credit ("ITC") of \$49,224 claimed in connection with those expenses.

[3] At the hearing, Mr. Robbert Jan van Eijle, the president of Indusol, as well as its sole shareholder and director, represented Indusol and testified on its behalf. Ms. Sandrine Nothomb, a Canada Revenue Agency ("CRA") financial examiner, as well as Ms. Nadine Bisson, a CRA research and technology advisor, who both reviewed the DIS Project, also testified at the hearing.

[11] The DIS Project objective was described as being to determine whether it is possible for a vessel to transit from Montreal to Lake Erie (via Lake Ontario and the Welland Canal) consistently at a draft of 8.15 m with a minimum UKC of 30 cm.

[114] The overall [technological] objective of the DIS implementation specifications was to develop a standard that specified how the UKC of a vessel could be calculated by considering water level, bottom depth and ship dynamics. Mr. van Eijle confirmed that the purpose of this document was to ensure that any DIS system used on the Seaway would meet certain minimum requirements or would calculate the UKC in a specific manner.

Field of Science/Technology:

Computer sciences (1.02.01)

Project Details:

Intended Results: Develop new processes
Work locations: Research Facility
Key Employees: Robbert Jan van Eijle (shipping management - no technical background noted in case (2000) / President)
Evidence types: Test protocols, test data, analysis of test results, conclusions; Design, system architecture and source code; Records of trial runs

Scientific or Technological Advancement:

Uncertainty #1: 5 Questions - Technological Uncertainty vs. Systematic Investigation

The judge reviewed the eligibility using the 5 questions cited in the Northwest Hydraulics Case.

- 1- Was there a technological risk or uncertainty which could not be removed by routine engineering or standard procedures?
- 2- Did Indusol formulate hypotheses specifically aimed at reducing or eliminating the technological uncertainty?
- 3- Did the procedure adopted accord with the total discipline of the scientific method, including the formulation, testing and modification of hypotheses?
- 4- Did the process result in a technological advancement?
- 5- Was a detailed record of the hypotheses tested, and results kept as the work progressed?

[47] The Appellant identified several uncertainties and challenges which arose either in the 2012 taxation year or throughout the period from 2010 to 2012. According to the Respondent, these uncertainties and challenges were not technological uncertainties within the meaning of the SR&ED criteria, as many of the stated uncertainties had to do simply with decisions that the DIS Workgroup needed to make with respect to the DIS standards. Also, in some instances, Indusol did no more

Project Name: Indusol - marine software & SI (LOSS)
Project Number: 2102

Start Date: 2021-01-01
Completion Date: 2021-07-30

than identify the problems, which is not an SR&ED activity.

[48] For the reasons stated below, I find that, on a balance of probabilities, only some of the uncertainties raised with respect to the squat issues constitute technological uncertainties within the meaning of the SR&ED criteria. Other uncertainties and challenges identified by the Appellant do not constitute technological risks or uncertainties within the meaning of the SR&ED criteria.

The most significant underlying key variables are:

How to measure velocity of current in real time (unresolved), Squat formula for different sections of channel, Squat for vessels at differing speeds

Technology or Knowledge Base Level:

Benchmarking methods & sources for citations:

Benchmark Method/Source	Measurement	Explanatory notes
Similar prior in-house technologies	2 products / processes	The formulas to calculate the squat in various situations were originally developed by the Université Laval in 2002. From 2008 to 2010 Indusol developed the DIS system.

Activity #1-1: Technological Uncertainty (TU) Existed (Fiscal Year 2021)

Methods of experimentation:

Method	Experimentation Performed
Trials:	50 runs / samples

[13] ... in November 2010, a workgroup which included industry players (system manufacturers and shipping enterprises) and representatives of the Seaway Authorities, as well as Mr. van Eijle and Mr. O'Brien of Idon Technologies (the "DIS Workgroup") was formed and met for the first time.

The objective of the DIS Workgroup was to oversee the process for the drafting of the DIS implementation specifications, including the various conformance test procedures. Since the first draft prepared by the Seaway Authorities was clearly unsatisfactory, Mr. van Eijle, through Indusol, volunteered to act as the technical reference for the drafting of these implementation specifications, and Mr. O'Brien was hired to actually write them.

[14] Throughout 2011, various drafts of the DIS implementation specifications were prepared and posted on the Seaway Authorities' websites for public comment, and various meetings of the DIS Workgroup were held. The Seaway Authorities accepted that some testing of the DIS be done by Indusol in the Seaway. After each round of publication, the DIS Workgroup met to resolve any concerns raised, and additional research was done to that end.

[47] The Appellant identified several uncertainties and challenges which arose either in the 2012 taxation year or throughout the period from 2010 to 2012.

According to the Respondent (CRA), these uncertainties and challenges were not technological uncertainties within the meaning of the SR&ED criteria, as many of the stated uncertainties had to do simply with decisions that the DIS Workgroup needed to make with respect to the DIS standards.

Also, in some instances, Indusol did no more than identify the problems, which is not an SR&ED activity.

- a) Gathering hydrographical data
- b) Hydraulics issues
- c) Under Keel Clearance issues
- d) Squat issues
- e) User interface and display requirement
- f) Water level information
- g) Communication

(d) Squat issues

[58] According to Mr. van Eijle, issues relating to squat (which is the extra sinkage of a vessel created by the speed of the vessel through the water) were the biggest challenges faced by Indusol in the DIS Project.

Project Name: Indusol - marine software & SI (LOSS)
Project Number: 2102

Start Date: 2021-01-01
Completion Date: 2021-07-30

[59] The evidence showed that different squat formulas have to be used in various situations, depending on the type of ship, the type of channel, and speed ranges.

Indusol tested the accuracy of squat formulas from different sources and decided to implement the formulas developed by the Université Laval in 2002. Furthermore, the evidence showed that Indusol had to determine how to implement and apply the squat formulas within the DIS.

[60] Even though the squat formulas used by Indusol were already available, I find that, on a balance of probabilities, there were still some technological uncertainties involved in the process for the implementation of the squat formulas within the DIS. These uncertainties with respect to the additional squat that occurs when two vessels meet in a channel could not be resolved by routine engineering or standard practices.

[61] Technological uncertainty within the meaning of the SR&ED criteria may occur in either of two ways: “. . . it may be uncertain whether the goals can be achieved at all; or 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” (the Circular, at para. 2.10.2).

[62] The Appellant identified three uncertainties with respect to implementing the squat formulas in the DIS:

- (1) the speed of a vessel could not be easily measured because there was no solution for measuring the velocity of the current in real time;
- (2) the squat formula needed to be altered for different sections of the channel; and
- (3) the additional squat that occurs when two vessels approach each other at different speeds has to be accounted for.

[63] According to Mr. van Eijle, the first major uncertainty in the implementation process was to ascertain how to measure the speed of a vessel through the water while taking into consideration the velocity of the current. Furthermore, Mr. van Eijle testified that there was no solution for measuring the velocity of the current in real time.

Indusol proposed using a table in order to determine the velocity of the current. To calculate the actual speed through the water of a vessel navigating downstream, the velocity of the current would be added to the GPS speed of the vessel. To calculate the actual speed of a vessel navigating upstream, the velocity of the current would be deducted from the GPS speed of the vessel.

Indusol was requested to test the proposal on board vessels, and the proposal was ultimately accepted.

[65] According to Mr. van Eijle, the second major uncertainty was how to change the squat formulas according to the channel type during a ship's transit. Indusol proposed dividing the Seaway into multiple sections and assigning a channel type to each section. When a vessel travelled in a certain section, the system would apply the appropriate squat formula for the section depending on the assigned channel type. Indusol was requested to test the proposal and this proposal was also ultimately accepted.

[67] The third major uncertainty was how to take into account the increased squat when two vessels meet in a channel. Since the additional squat was uncertain, Indusol performed tests to measure the additional squat when two ships were traveling at different speeds. This additional squat was then added to the squat calculation.

Results:

[64] Regarding the first uncertainty, I find that, on a balance of probabilities, there was no technological uncertainty within the meaning of the SR&ED criteria, because I am not satisfied that the uncertainty could not be resolved using routine engineering or standard procedures.

Mr. van Eijle testified that he proposed to use a table in order to determine the velocity of the current. No evidence was adduced at the hearing as to the difficulty involved in this method, or as to whether the table was readily available to competent professionals in the industry. Therefore, I find that the Appellant has not shown that this was a technological uncertainty which could not be removed by the application of routine engineering or standard procedures.

[66] As regards the second uncertainty, I find that, on a balance of probabilities, there was no technological uncertainty within the meaning of the SR&ED criteria because I am not satisfied that the uncertainty could not be resolved using routine engineering or standard procedures.

The evidence showed that the various squat formulas developed by the Université Laval in 2002 took into account the different channel types. I find that routine engineering or standard procedure could have been used to resolve that

Project Name: Indusol - marine software & SI (LOSS)
Project Number: 2102

Start Date: 2021-01-01
Completion Date: 2021-07-30

uncertainty.

[68] Concerning the third uncertainty, the evidence showed that the Université Laval's research did not include a method to calculate the additional squat when two vessels approach each other at different speeds.

The Appellant was uncertain as to whether the proposed solutions would be effective in achieving the goals or desired specifications. Therefore, I find that, on a balance of probabilities, the evidence showed that there was technological uncertainty within the meaning of the SR&ED criteria.

[91] According to the Timeline, during a DIS Workgroup meeting held on June 13, 2011, the uncertainties associated with the squat issues were identified. Indusol proposed potential solutions to address these uncertainties. At the hearing, Mr. van Eijle further explained the various proposals.

[92] According to the Respondent, there is no evidence that the Appellant formulated any hypothesis designed to reduce or eliminate the uncertainties or that it conducted a methodical and systematic testing of the hypothesis. The evidence showed that Mr. van Eijle would identify a problem and try to resolve it, but the process involved is unclear.

Conclusion:

[69] For these reasons, I find that, on a balance of probabilities, there was some technological uncertainty within the meaning of the SR&ED criteria as regards the implementation of the squat formulas within the DIS.

This uncertainty was with respect to the additional squat when two vessels meet in a channel. I also find that Indusol carried out the above-described activities during the 2012 taxation year.

[93] On the evidence adduced at trial, I find that, on a balance of probabilities, hypotheses were formulated that were designed to reduce or eliminate the technological uncertainties involved with respect to the squat issues.

However, for the reasons explained below in the section dealing with the third criterion, I am not convinced that Indusol conducted a methodical and systematic testing of the hypotheses.

Accordingly, I find that the second criterion is not met, as it requires the methodical and systematic testing of hypotheses.

Significant variables addressed: Squat for vessels at differing speeds, Squat formula for different sections of channel

Documentation:

Uploaded to RDBASE.NET: Indusol SRED tax ruling - SI & software - LOSS with Costs.pdf (511KB)

Offline Documents: docs

Activity #1-2: Lack of Systematic investigation (Fiscal Year 2021)

Methods of experimentation:

[99] ...accorded with the total discipline of the scientific method. The Appellant simply did not adduce sufficient evidence to meet this criterion.

[100] According to the Timeline, the Appellant identified uncertainties with respect to the squat formulas and identified as well the potential solutions and the final accepted solutions.

Even though the Timeline mentions that Indusol was requested to conduct research and testing on board vessels, there is no information on what tests and research were actually carried out.

[101] Mr. van Eijle's testimony about how Indusol tested the proposed solutions and what the results of the tests were was also very vague. For example, with respect to calculating the additional squat when two ships approach each other in a channel, Mr. van Eijle testified that

"since we don't know exactly what it is, we, out of testing, created a table with speed ranges. . . . We went on board and measured and measured and measured. . . ." (Transcript of February 10, 2020, at p.101, lines 10-11, 21-22).

There was no evidence about any controlled experiments to test the proposed solution against empirical evidence.

With respect to calculating the speed of a ship taking into consideration the velocity of the current, Mr. van Eijle explained during the trial the solution ultimately arrived at, but there was no evidence as to whether systematic observation, measurement, and experiment were performed with a view to modifying the proposed solution which led to the final solution.

[115] ... to comply with the DIS implementation specifications. A series of conformance tests must be performed to demonstrate that the product meets the requirements in the specifications.

Project Name: Indusol - marine software & SI (LOSS)
Project Number: 2102

Start Date: 2021-01-01
Completion Date: 2021-07-30

Exhibit A-12 documents the conformance testing procedures established for that purpose. This document does not record the hypotheses tested by Indusol and the test results.

It is merely a set of testing procedures that must be followed in order to determine whether a DIS conforms with the established standards.

[116] The Appellant also provided several charts which purportedly document work done by Indusol:

Exhibit A-6: Comments by Indusol Industrial Control Ltd. on Draft Working Document Version 1.00 (dated January 30, 2011)
Exhibit A-8: Comments on CD 1 of a Draught Information System for the St. Lawrence Seaway (dated January 18, 2011)
Exhibit A-9: Comments on CD 1 of a Draught Information System for the St. Lawrence Seaway (dated January 18, 2011, updated August 21, 2011)
Exhibit A-10: Resolution of Comments on CD 2 of a Draught Information System for the St. Lawrence Seaway (dated August 24, 2011)

[117] After reviewing those charts, I am not satisfied that they contain hypotheses tested and test results. The charts are records of Indusol's comments on specific provisions of the draft DIS implementation specifications and the DIS conformance tests.

In some instances, the proposed changes to the provisions and the final decisions of the DIS Workgroup are included, but I do not find that any of the documents include hypotheses tested and test results.

Results:

Conclusion:

[102] For these reasons, I am not convinced that the procedure adopted by Indusol accorded with the total discipline of the scientific method. The Appellant simply did not adduce sufficient evidence to meet this criterion.

Therefore, for these reasons, I find that, on a balance of probabilities, the third criterion is not met.

[AUTHOR'S NOTE: COSTS ON THIS CASE AMOUNTED TO \$ _____ - CHECK WITH TAX COURT OF CANADA]

Uncertainty #2: Financial issues

Technology or Knowledge Base Level:

Activity #2-1: Tracking labour expenses (Fiscal Year 2021)

Methods of experimentation:

[135] In February 2013, the CRA requested details regarding the breakdown of the efforts devoted by the employees to the activities engaged in by Indusol during that year, and acknowledged the absence of timesheets to that point. The evidence showed that no such details were submitted to the CRA.

The Appellant could have used agendas, records, e-mail exchanges, notes and correspondence to reconstruct that information, as the CRA's request was made less than a year after the end of the 2012 taxation year.

Results:

Conclusion:

[137] Here, Mr. van Eijle simply estimated the number of hours he and Ms. Clément worked during the 2012 taxation year and claimed that 75% and 50% of their respective time was devoted to SR&ED activities.

Since the Appellant's estimates are extremely general and were submitted without any evidentiary support, the salaries paid to Mr. van Eijle and Ms. Clément cannot be allowed as deductible eligible SR&ED expenditures and cannot be considered qualified expenditures for ITC purposes.

I find that the lack of evidence as to the time spent on various tasks is fatal to Indusol's claim.

Activity #2-2: Software as material cost? (NO) (Fiscal Year 2021)

Methods of experimentation:

Project Name: Indusol - marine software & SI (LOSS)
Project Number: 2102

Start Date: 2021-01-01
Completion Date: 2021-07-30

[147] The Act does not define the words “materials” or “consumed”. The principles of interpretation as set out by the Supreme Court of Canada are that the words of an Act “. . . are to be read in their entire context and in their grammatical and ordinary sense harmoniously with the scheme of the Act, the object of the Act, and the intention of Parliament’ . . . The interpretation of a statutory provision must be made according to a textual, contextual and purposive analysis to find a meaning that is harmonious with the Act as a whole” (Canada Trustco Mortgage Co. v. Canada, 2005 SCC 54, at paragraph 10, [2005] 2 S.C.R. 601). The Supreme Court also indicates that when the words are precise and unequivocal, their ordinary meaning will play a dominant role, but if the words can support more than one reasonable meaning, the ordinary meaning of the words will play a lesser role.

[150] In Black’s Law Dictionary (11th ed.), material is defined as “1. A solid substance such as wood, plastic, metal, or paper. 2. The things that are used for making or doing something. 3. Information, ideas, data, documents, or other things that are used in reports, books, films, studies, etc.”

Results:

Conclusion:

[151] Given the ordinary meaning of the word material, which generally refers to elements from which something is made, I find that the Licence cannot be considered as a “material”.

The Licence was used by Indusol to help with software development and hence is not an element from which something is made.

Given my conclusion in respect of the word material, I do not have to consider the meaning of the word “consumed”. Therefore, the cost of the Licence cannot be claimed by Indusol under paragraph 37(1)(a) as a current expense as a cost of materials consumed in the prosecution of SR&ED.

2103 - National R&D - software & SI (LOSS)			
BENCHMARKS	ACTIVITIES BY YEAR		
Internet searches: 3 Articles Internet searches: 1 Articles Internet searches: 1 Articles Competitive products or processes: 3 products Suppliers: 1 products	2021		
	'1-1	'2-1	'3-1
	techniques for paging, sorting & indexing	pivot output mechanism	deterministic stateful client-side control
OBJECTIVES	RESULTS		
deterministic and stateful client-side control.: 1 0 = no 1 = yes develop pivot output mechanism: 1 0=no 1 = yes response time: 5 seconds	5	0	1
UNCERTAINTIES & KEY VARIABLES	CONCLUSIONS		
1 - paging, sorting & indexing method			
ADO, Classic ASP, COM+ and SQL Server 2000	Y		
MTA limitations of framework	Y		
2 - develop pivot table mechanism			
static vs.dynamic environment			
web browser deployment methods		Y	
3 - stateful client control			
session variables and cookies			
	METHODS		
Analysis		5	
Trials	50	3	5
Prototypes			
Lines of code			
	COSTS		
Hours	350	220	180
Materials \$			
Subcontractor \$			

Project Name: National R&D - software & SI (LOSS)
Project Number: 2103

Start Date: 2021-01-01
Completion Date: 2022-01-31

Project Details:

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
deterministic and stateful client-side control. (0 = no 1 = yes)	0	1	Yes
develop pivot output mechanism (0=no 1 = yes)	0	1	Yes
response time (seconds)	10	5	Yes

[1] National Research & Development Inc. ("National"), a Canadian-controlled private corporation, which was incorporated on January 1, 2011, provided consulting services to clients in the areas of engineering, information technology, scientific research and experimental development tax credits and Ontario interactive digital media tax credits.

[2] For the 2011 taxation year the Minister disallowed the claim made by National for the expenses it incurred with respect to the PTS Project, totalling \$68,029, claimed as SR&ED expenditures as well as the investment tax credit ("ITC") of \$23,810. [AUTHOR'S NOTE: UNDER \$25K INFORMAL LIMIT BUT CLIENT ELECTED FULL PROCEDURE.]

[3] During the 2011 taxation year, the sole shareholder and president of National was Mr. Amit Saini. Mr. Saini was the only witness at the hearing. He was directly involved in the PTS Project as he conducted the activities himself, with the help of a student. Mr. Saini was accepted by the Court as a "litigant expert" (Kaul v. The Queen, 2017 TCC 55, at para. 32).

[4] Mr. Saini obtained a Bachelor of Engineering degree from McMaster University in 2003 and got his professional engineering license in 2007. He also obtained a Master of Business Administration degree (MBA) from Wilfrid Laurier University in 2010, a Certified Management Accounting (CMA) designation in 2011 and a Chartered Professional Accounting (CPA) designation in 2012.

Before founding National, he was employed by Meyers Norris Penny from April 2010 to March 2011 as a SR&ED manager. From July 2006 to April 2010, he was employed by ATS Automation Tooling Systems as a senior SR&ED specialist.

Prior to that (2006), he had worked as a manufacturing engineer and product manager at Precision Resource Inc. and in these capacities he was responsible for identifying and tracking SR&ED projects, and he had developed a web-based inventory system using ASP and SQL Server 2000.

OBJECTIVES:

[22] The first phase of the PTS Project, which was carried out during the 2011 taxation year, involved establishing an efficient and concise time-tracking system, and it had three sub-objectives (hereinafter collectively referred to as the "Objectives"):

1. To develop techniques for record set paging, sorting, and indexing that were compatible with the MTA ("Objective 1");
2. To develop a mechanism for in-memory array initialization of joint record sets such as "pivot-like output" ("Objective 2"); and
3. To develop methods for deterministic and stateful client-side control ("Objective 3").

Field of Science/Technology:

Computer sciences (1.02.01)

Project Details:

Intended Results: Develop new materials, devices, or products
Work locations: Commercial Facility
Key Employees: Amit Saini (Mechanical - BEng, PEng. (2003) / CEO)
Evidence types: Test protocols, test data, analysis of test results, conclusions; Records of resources allocated to the project, time sheets; Design, system architecture and source code; Project planning documents; Design of experiments

Scientific or Technological Advancement:

Uncertainty #1: paging, sorting & indexing method

COMMERCIAL CO

Project Name: National R&D - software & SI (LOSS)
Project Number: 2103

Start Date: 2021-01-01
Completion Date: 2022-01-31

[29] Mr. Saini's testimony was clear in that the PTS Project was to be developed through the MTA.

The MTA consisted of ADO, Classic ASP, COM+ and SQL Server 2000. Mr. Saini had determined that SQL Server 2000 would be used for that purpose and not SQL Server 2005. Furthermore, the framework of the PTS Project had to be web-based, cross-platform and cross-browser compatible.

The fact that SQL Server 2005 existed and had a PIVOT command at the time is not relevant for the purpose of determining whether the activities undertaken by National qualify as SR&ED.

[34] As a preliminary step or as the work was progressing, Mr. Saini examined various technical articles, copies of which were adduced in evidence, to determine whether it was possible to achieve the objectives of the PTS Project within the MTA.

[35] In respect of Objective 1, Mr. Saini testified that he conducted internet research and as a result consulted three articles, namely: "Efficiently Paging Through Large Result Sets In SQL Server 2000" (Exhibit A-4, at p. 41), "SQL Server 2000 Paging and Sorting Using ROWCOUNT And SQL_VARIANT" (Exhibit A-4, at p. 46), and "Efficient Paging of Recordsets: SQL Server 2000" (Exhibit A-4, at p. 53).

[36] Mr. Saini testified that solutions described in these articles would not work within the MTA for various reasons.

Some of the methods described did not return results reliably or efficiently. Additionally, one of the methods described only worked in static environments (the environment for the PTS Project needed to be dynamic).

After reviewing the above-mentioned articles, Mr. Saini concluded that there was no existing method that he could use within the MTA that met all of National's criteria.

[39] Mr. Saini testified about the technological uncertainties in the PTS Project and to the fact that no similar program already existed. According to Mr. Saini, the technological uncertainties were as follows:

i) For Objective 1: how to achieve paging, sorting and indexing of large data sets within the MTA with a maximum response time of 5 seconds;

[40] The Minister made assumptions that there were no technological uncertainties in any of the Objectives and that the activities undertaken by National could have been performed by the application of existing well-known information technology techniques.

The most significant underlying key variables are:

MTA limitations of framework, ADO, Classic ASP, COM+ and SQL Server 2000

Technology or Knowledge Base Level:

Benchmarking methods & sources for citations:

<u>Benchmark Method/Source</u>	<u>Measurement</u>	<u>Explanatory notes</u>
Internet searches	3 Articles	[35] In respect of Objective 1, Mr. Saini testified that he conducted internet research and as a result consulted three articles, namely: "Efficiently Paging Through Large Result Sets In SQL Server 2000" (Exhibit A-4, at p. 41), "SQL Server 2000 Paging and Sorting Using ROWCOUNT And SQL_VARIANT" (Exhibit A-4, at p. 46), and "Efficient Paging of Recordsets: SQL Server 2000" (Exhibit A-4, at p. 53).
Competitive products or processes	3 products	[33] Mr. Saini testified .. In 2011, there was no web-based program that would allow for time tracking of SR&ED projects. QuickBooks Online can be used nowadays, but Mr. Saini testified that back in 2011 its infancy functionality limited. Other programs Kashoo & R&D Manager too rudimentary to meet National's needs.

Project Name: National R&D - software & SI (LOSS)
Project Number: 2103

Start Date: 2021-01-01
Completion Date: 2022-01-31

Methods of experimentation:

Method	Experimentation Performed
Trials:	50 runs / samples

[23] Work was performed under Objective 1 to develop techniques for record set paging, sorting and indexing that were compatible with ADO, Classic ASP, Com+ and Microsoft SQL Server 2000. According to Mr. Saini, it was necessary to efficiently sort through the data, to push it from SQL Server 2000 through the MTA to the browser incrementally and then to display very quickly only data relevant to a particular client. Work undertaken to achieve this objective involved trying to overcome the paging limitations of SQL Server 2000 using "DataGrid" and "GridView" in ASP. Mr. Saini also testified that he tried using the ASP response buffer to incrementally push the data to the browser, but that method did not work. Other techniques that Mr. Saini attempted which were not successful include using "GetRows" in ADO and using temporary tables to achieve pagination. Eventually, the work undertaken resulted in the creation of what Mr. Saini referred to as the "Stitching Mechanism", a piece of code which allowed SQL statements to be constructed dynamically and allowed simple queries which utilized single-column sorting to return results. That technique was further refined and eventually some success on this point was achieved. According to Mr. Saini, the Stitching Mechanism which utilized dynamic SQL was an invention developed by National, but National was only partially successful in attaining the results desired under Objective 1.

ISSUES RELATED TO SUPPORTING DOCUMENTATION:

[50] Various documents were tendered in evidence by Mr. Saini, which, according to him, show that the scientific method was followed in developing the PTS Project. These documents are

- the Project Timeline,
- the Letter,
- a document titled "Trials to Achieve Sorting & Paging With Set Constraints" (Exhibit A-7) and various pieces of source code for portions of the PTS Project.

[51] According to Mr. Saini, the Project Timeline contains the details of the activities undertaken and the time spent on each of the activities and was completed as the work was being done. Mr. Saini also testified that it represents the hypotheses National was testing as the coding was being completed.

[52] However, upon reviewing the Project Timeline, I do not agree with Mr. Saini's position.

The Project Timeline lists vague descriptions of the work being completed and some of the specific problems National was trying to overcome along with a corresponding time entry.

While I have found that there was enough evidence to support a conclusion that there were, in fact, hypotheses, this document does not show the formulation, testing and modification of these hypotheses.

Further, there does not seem to be a logical progression between any of the entries in the document.

The Project Timeline does not indicate how any hypotheses were tested and does not list any experimentation or the results of any experimentation.

In addition, there is nothing in this document to indicate that any hypotheses were modified as a result of experimentation.

[53] The Letter is more substantial than the Project Timeline. For Objective 1, the Letter specifies that hypotheses were formulated, that over 50 experiments were conducted and that the hypotheses ultimately proved to be correct.

The Letter also references the document titled "Trials to Achieve Sorting & Paging With Set Constraints" (Exhibit A-7), which is a table outlining 50 experiments and their outcomes.

I do not find this table very helpful.

- Several of the experiments are grouped together;
- what is being tested is unclear;
- how testing is being conducted is also unclear; and
- the results listed are vague.

Furthermore, there does not appear to be any reference to the testing or modification of the hypotheses.

Project Name: National R&D - software & SI (LOSS)
Project Number: 2103

Start Date: 2021-01-01
Completion Date: 2022-01-31

No similar document was adduced in evidence with respect to Objectives 2 and 3.

Results:

response time: 5 seconds (100% of goal)

[63] More specifically, with respect to Objective 1, Mr. Saini testified that the technological advancement had been the development of the “Stitching Mechanism” which made it possible to achieve that Objective.

Conclusion:

TECHNOLOGICAL ADVANCEMENTS CLAIMED

[62] Mr. Saini testified that there was technological advancement in relation to the Objectives of the PTS Project. Specifically, he testified that National invented “Dynamic SQL”.

Further, many steps were taken with a view to attaining each objective, even if they were not all successful.

JUDGE'S ANALYSIS

The judge reviewed the eligibility using the 5 questions cited in the Northwest Hydraulics Case.

- 1- Was there a technological risk or uncertainty which could not be removed by routine engineering or standard procedures?
- 2- Did the company formulate hypotheses specifically aimed at reducing or eliminating the technological uncertainty?
- 3- Did the procedure adopted accord with the total discipline of the scientific method, including the formulation, testing and modification of hypotheses?
- 4- Did the process result in a technological advancement?
- 5- Was a detailed record of the hypotheses tested, and results kept as the work progressed?

The judge then further parsed question 2 into several subquestions

[45] As indicated by Justice Bowman in Northwest Hydraulic (at para. 16), the second criterion, i.e., the formulation of hypotheses aimed at reducing the technological uncertainties, involves a five-stage process:

- i) The observation of the subject matter of the problem;
- ii) The formulation of a clear objective;
- iii) The identification and articulation of the technological uncertainty;
- iv) The formulation of a hypothesis designed to reduce or eliminate the uncertainty; and
- v) The methodical and systematic testing of the hypothesis or hypotheses.

[47] Given the testimony of Mr. Saini and the documents referred to above and adduced in evidence at the hearing, I find, on a balance of probabilities, that National did formulate hypotheses specifically aimed at reducing or eliminating the technological uncertainties raised by the PTS Project.

However, as indicated below under the analysis of the third criterion, Mr. Saini failed to convince me, on a balance of probabilities, that methodical and systematic testing of the hypotheses was conducted by National.

Accordingly, the second criterion is not met as it requires the methodical and systematic testing of the hypotheses.

Significant variables addressed: ADO, Classic ASP, COM+ and SQL Server 2000, MTA limitations of framework

Documentation:

Uploaded to RDBASE.NET: National R&D SRED tax ruling - SI & SRED software - LOSS.pdf (257KB)

Offline Documents: nature of documents

Uncertainty #2: develop pivot table mechanism

[39] Mr. Saini testified about the technological uncertainties in the PTS Project and to the fact that no similar program already existed. According to Mr. Saini, the technological uncertainties were as follows:

For Objective 2: how to develop a pivot table reporting in a cross-platform and cross-browser environment;

[37] In respect of Objective 2, Mr. Saini testified that he also conducted internet research, and he referenced one article entitled: “Pivot and Un-Pivot data in SQL” (Exhibit A-4, at p. 82). According to Mr. Saini, the method described in this article only works in a static environment, and was not suitable for National’s needs.

Project Name: National R&D - software & SI (LOSS)
Project Number: 2103

Start Date: 2021-01-01
Completion Date: 2022-01-31

Mr. Saini testified that at that time pivot tables were not available in an application that was accessible through a web browser and that pivot tables had definitely not been used in combination with anything similar to the MTA.

Mr. Saini also researched the PIVOT command available in SQL Server 2005 and concluded that it would not solve the problems encountered by National. Mr. Saini testified that the PIVOT command was only available in SQL Server 2005, and not in SQL Server 2000, which is a different version of the program than the one National was using.

Further, the PIVOT command only worked in SQL Server 2005, and was not necessarily compatible with the other components of the MTA. Finally, National had already purchased SQL Server 2000 and did not have the means to purchase SQL Server 2005. Furthermore, Mr. Saini did not think that the PIVOT command in SQL Server 2005 would even achieve National's objectives.

[40] The respondent (CRA)... argued that the PIVOT command in SQL Server 2005 would have accomplished Objective 2, and that this was a generally accepted method used by professionals in the area at the time the activities in respect of the PTS Project were undertaken by National.

The most significant underlying key variables are:

static vs.dynamic environment (unresolved), web browser deployment methods

Technology or Knowledge Base Level:

Benchmarking methods & sources for citations:

Benchmark Method/Source	Measurement	Explanatory notes
Internet searches	1 Articles	[37] article entitled: "Pivot and Un-Pivot data in SQL" (Exhibit A-4, at p. 82). According to Mr. Saini, the method described in this article only works in a static environment, and was not suitable for National's needs.
Suppliers	1 products	the PIVOT command only worked in SQL Server 2005, and was not necessarily compatible with the other components of the MTA. Finally, National had already purchased SQL Server 2000 and did not have the means to purchase SQL Server 2005. Furthermore, Mr. Saini did not think that the PIVOT command in SQL Server 2005 would even achieve National's objectives.

Activity #2-1: pivot output mechanism (Fiscal Year 2021)

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	5 alternatives
Trials:	3 runs / samples

[24] Work was performed under Objective 2 to develop a mechanism, such as a "pivot-like output" for in-memory array initialization of joint record sets.

The goal was to emulate pivot tables, which is a reporting mechanism in Microsoft Excel that aggregates and summarizes data, but to do so in a web-based program.

Mr. Saini testified that he knew that SQL Server 2005 had a PIVOT command, but that it was not advanced enough to meet the objectives of National. However, National still tried to emulate the functionality of the PIVOT command in SQL Server 2000. National encountered numerous problems and was unable to effectively emulate the PIVOT command in SQL Server 2000.

After attempting other methods that were also unsuccessful and in a final attempt to achieve Objective 2, National tried to integrate SQL Server 2000 reporting services, but this method encountered compatibility issues with portions of the MTA and did not work. Ultimately, this objective was unsuccessful and was never achieved.

Project Name: National R&D - software & SI (LOSS)
Project Number: 2103

Start Date: 2021-01-01
Completion Date: 2022-01-31

Trials: 5 runs / samples

[25] Work was performed under Objective 3 to develop methods for deterministic and stateful client-side control.

National was trying to develop the ability to pass information from SQL Server 2000 through to the MTA and then to the browser in a manner that would make users believe that all of the previews for their choices were being generated instantaneously, when in fact the data was not pushed from SQL Server 2000 through the MTA to the browser until the actual choice was made.

In order to complete this objective, National tried a few different things. Mr. Saini testified that they first attempted to use session variables and cookies to store the information and make the process appear instantaneous, but that method did not work.

The second method that was attempted was to temporarily store the data at the browser level and to hide that data from the user. Since the browser was unable to store the required amount of data, this method was unsuccessful.

Finally, National developed the "handout" method, which involved a hybrid between ASP and JavaScript that performed recursive posts to the server. The "handout" method resulted in some success.

ISSUES RELATED TO SUPPORTING DOCUMENTATION (SOURCE CODE):

[55] For Objective 3, the Letter indicates that hypotheses were made and vaguely explains how the Objective was achieved. However, it does not explain what experimentation was conducted, how many experiments were conducted, or how the experimentation was conducted, nor does it set out the results in any detail. Additionally, the Letter does not specify how hypotheses were tested, or if they were modified as a result of the testing.

[56] Finally, the evidence adduced by National does include some source code.

[57] By reviewing these pieces of source code, I am not able to determine if they are early versions of the source code, or the final product. Mr. Saini did testify that he had different versions of the source code saved on a server at home, but these versions are not in evidence.

It is worth noting that "GRIDTIMEENTRIES.ASP" and "Gridtumentries.asp with ADO iteration" do at first glance appear to be related. However, no evidence was provided to show if or how these two pieces of code are related.

Additionally, there is no explanation regarding if or how experimentation was conducted in order to advance from one version to the other and which is the later version, nor is there any evidence as to whether or not the experimentation proceeded in accordance with the scientific method.

With respect to the other pieces of source code, I am not able to deduce a trend from a single data point and I do not see any evidence of an advancement of the source code nor is there any evidence as to whether or not it progressed in accordance with the scientific method.

Since I only have one version of most of the source code, and nothing to tell me if or how the other two pieces of source code are related, there simply is not enough evidence on the record to draw a conclusion on this point.

[70] As mentioned above, the evidence contains some pieces of source code.

If National had submitted a revision history - which it did not - or numerous versions of the same piece of code, it may have been possible to determine what tests were conducted and the results of those tests.

However, such is not the case: no explanation of any advancement in respect of the code was tendered as evidence, and I am unable to conclude that what was adduced in evidence is a detailed record of the testing and results.

Results:

deterministic and stateful client-side control.: 1 0 = no 1 = yes (100% of goal)

[26] The PTS Project never successfully achieved all of the Objectives, although, according to Mr. Saini, there was some degree of success on all three.

[63] with respect to Objective 3, National was able to come up with a viable solution using JavaScript.

Conclusion:

Project Name: National R&D - software & SI (LOSS)
Project Number: 2103

Start Date: 2021-01-01
Completion Date: 2022-01-31

TECHNOLOGICAL ADVANCEMENTS CLAIMED

[62] Mr. Saini testified that there was technological advancement in relation to the Objectives of the PTS Project. Specifically, he testified that National invented "Dynamic SQL".

Further, many steps were taken with a view to attaining each objective, even if they were not all successful.

[63] with respect to Objective 3, National was able to come up with a viable solution using JavaScript.

[64] I find Mr. Saini's testimony credible on this point. As a result, I find that there was some technological advancement in relation to the Objectives of the PTS Project, but not advancement within the meaning of the definition of SR&ED.

As mentioned above, in order to find that a technological advancement was achieved, I would have to first find that technological uncertainties were removed through a process of systematic investigation, which I do not.

Having concluded that National did not carry out systematic investigation to remove technological uncertainties, I cannot find that this criterion is met.

RULING & RATIONALE (LOSS):

[73] While it is not mandatory that the evidence be documentary, and testimonial evidence may be presented, I did not find that Mr. Saini's testimony made up for the inadequacy of the documentary evidence.

Mr. Saini's testimony did not detail the methodology behind the testing, how many tests were conducted with respect to each objective (other than Objective 1), how tests differed from other tests conducted or what the results of all of those tests were.

He testified regarding some of the problems National faced for each of the Objectives, but the explanations concerning the tests conducted were vague at best, and there was no discussion of specific measurable results.

From the explanations provided by Mr. Saini, I cannot conclude that there was a "logical progression between each test and preceding or subsequent tests", and therefore I cannot conclude that National carried out a systematic investigation in respect of the PTS Project.

[74] National has failed to show, on a balance of probabilities, that the procedure adopted in the development of the PTS Project accorded with the total discipline of the scientific method, including the formulation, testing and modification of hypotheses, and that that process resulted in a technological advancement.

Further, National was unable to show that a detailed record of the hypotheses tested and results was kept as the work progressed. Therefore, the activities undertaken by National in developing the PTS Project do not constitute SR&ED.

[75] For these reasons, the appeal is dismissed, with costs to the Respondent.

[AUTHOR'S NOTE: RELEVANCE OF EXPERT WITNESS TESTIMONY]

[5] I [THE JUDGE] did not qualify Mr. Dowd, the expert hired by National for the purposes of this appeal, as an expert witness at the hearing. The Respondent did not call any witnesses.

PERHAPS BASED ON THE LACK OF DOCUMENTATION CITED THE JUDGE ELECTED NOT TO CALL ON THE TESTIMONY OF THE EXPERT WITNESS (MR. DOWD).

IT IS ALSO NOTED THAT USE OF "SECTION VARIABLES WITH COOKIES" WAS CITED AS AN UNCERTAINTY HOWEVER, NO RELATED EXPERIMENTS OR CONCLUSIONS APPEAR TO BE PROVIDED ON THIS ISSUE.

[AUTHOR'S NOTE: COSTS ON THIS CASE AMOUNTED TO \$ _____ - CHECK WITH TAX COURT OF CANADA]