Dossier: 2016-1657 (IT) I

ENTER :

FORMADRAIN INC.,

Appellant,

and

HER MAJESTY THE QUEEN,

Respondent e.

Appeal heard on joint evidence with the appeal of Formadrain Inc., 2016-1658 (IT) I, on December 8 and 9, 2016, in Montreal, Quebec.

Before: The Honorable Justice Johanne D'Auray

Appearances :

Representative of the appellant:	Yves Hamelin
Counsel for the Respondent:	Mr. Gabriel Girouard

JUDGMENT

The appeal of the assessment made under *the Income Tax Act* for the 2013 taxation year is allowed and the assessment is referred to the Minister of National Revenue for a reassessment of the reassessment according to the reasons for judgment Attached.

Signed at Ottawa, Canada, this Day 15 of March 2017.

"Johanne D'Auray"

Judge D'Auray

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Counsel for the Respondent:	Mr. Gabriel Girouard

JUDGMENT

The appeal of the reassessment under *the Income Tax Act* for the 2012 taxation year is allowed and the reassessment is referred to the Minister of National Revenue for reconsideration and reassessment for the purposes of Judgment.

Signed at Ottawa, Canada this 15th day of March 2017.

"Johanne D'Auray"

Judge D'Auray

Reference: 2017 CCI 42
Date: 201703 15
Dossiers: 2016-1657 (IT) I
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REASONS FOR JUDGMENT

Justice D'Auray

I. INTRODUCTION

[1] This appeal relates to the claim by Formadrain inc. (The "Appellant") of Scientific Research and Experimental Development (SR & ED) tax credits that were refused by the Minister of National Revenue (the "Minister") for the 2012 and 2013 taxation years (" Periods in dispute ").

II. PREVIEW

[2] The appellant operates a company engaged in the development of technologies for the rehabilitation, without excavation, of underground conduits and industrial process conduits. Formadrain sells its technology in Canada and the United States.

[3] Established in 1994, the appellant initially developed a system that involves firing a pre-impregnated fiberglass and epoxy sheath into an existing pipe through existing accesses to repair underground conduits without excavating. In other words, a new pipe is made inside the old one, without digging [1] .

[4] To do this, the underground ducts are sheathed with a system baked in place, better known under the English name "Cured in Place Pipe" [2] .

[5] In 2012, the appellant team is working on two projects that involve the development of products for which SR & ED and CII ("investment tax

credit") expenditures are claimed:

1) The development of a latent resin ("resin");
2) The development of equipment to facilitate the installation of the Formadrain sheath, ie a lightweight single-use chuck ("mandrel") allowing installation in a single access instead of two.

[6] The context of these two projects is as follows. It is difficult for some clients of the appellant, either sewer repair contractors, to implement the appellant's technology. Often, sewer lines can reach up to 200 feet long. Small contractors often lack the space required to uncoil the sheath and apply the resin solution to such a surface.

[7] The appellant decides to develop a turnkey technology. Thus, the sheath, including the mandrel, would be sold preimpregnated with resin. The appellant's clients, the contractors, would receive a product ready to repair a sewer.

[8] To achieve this objective, the appellant must develop a resin with an open time of 60 days and can be steamed in 60 minutes or less, regardless of soil conditions such as water and temperature Variables. In 2012, the resin was only four hours long. To that end the appellant's external chemist told the appellant that she would not be able to develop a resin that would have an open time of 30 days and still less than 60 days.

[9] Still aiming to develop a turnkey technology, in addition to the resin, the appellant also wanted to develop a new mandrel, a lightweight one-use chuck. This new mandrel would allow the appellant to repair the underground duct without digging and to do so by accessing it only through access, or the "cleaner" inside the building rather than accessing the street either through The "manhole". In addition, a lightweight mandrel would allow it to be pushed in place instead of being pulled.

[10] During the years in dispute, the appellant used a chuck that was not a single use, which was heavy and expensive. Moreover, the method used was to pull the mandrel and to do this, two accesses had to be used.

[11] If the appellant succeeded in developing these two products that go hand in hand, this would make it possible to sell this turnkey technology. Thus, the resin-impregnated sheath having an open duration of 30 days to 60 days, including the new mandrel, would be transmitted to the client-contractors. The contractor would only have to make the repair. In addition, the contractor would not have to return the mandrel after the sewer lines

were repaired. This technology would facilitate the work of the contractors and open up a new market for the appellant.

[12] These projects began in 2010, but the technology was still not up to date in 2103. So during the 2012 and 2013 tax years, the appellant continued its research and development activities with respect to resin and mandrel One-time use.

[13] In 2013, a third project was added to its SR & ED activities, namely, the development of equipment and a method to connect the service inlet connection to the municipal main sewer, T-mandrel [3] .

[14] In May 2013, the appellant was audited by Mr. Eduardo Turcott, Research and Technology Advisor ("TRC"), the Canada Revenue Agency (CRA) and Ms. Michelle Lamarre, Financial Examiner ("RU") to the CRA, for the 2012 tax year.

[15] In November 2014, the appellant was also audited by Mr. Eduardo Turcott, CRT, and Ms. Élaine Jacques, EF, for the 2013 taxation year.

[16] At the time of the audits, a document was submitted to the RTA for each of the projects in dispute, listing the tests performed, the dates on which they occurred, the persons who participated in the tests, the duration of the tests and pictures. After Upon receipt of this information, the CRA requested additional documentation.

[17] In this regard, on September 27, 2013, the appellant sent a document containing the following information for each project:

- The overall objective of the project
- The overall project assumption
- The technological obstacles and uncertainties of the project
- Technological advancement of the project
- The scientific content of the project

This document also identified, for each of the tests carried out:

- The technological objective
- Technological advancement
- Scientific and technological uncertainty
- The hypothesis intended to dispel scientific or technological

uncertainty

- The relationship between the tests conducted and the technological advancement sought
- The quantity and type of materials used
- The result of the test
- The staff involved and the nature of the work carried out
- pictures

[18] In addition, on December 16, 2014, the appellant also sent for the 2013 taxation year a document containing the following information:

- The list of tests and drawings made by hand

[19] Also identified in the same document, for each of the tests carried out:

- Scientific and technological uncertainty
- The hypothesis intended to dispel scientific or technological uncertainty
- The relationship between the tests conducted and the technological advancement sought
- The quantity and type of materials used
- The result of the tests
- The staff involved and the nature of the work carried out
- pictures

[20] As a result of these audits by the CRA, reassessments were made by the Minister refusing the SR & ED expenditures claimed by the appellant. The appellant duly opposed these reassessments. On April 12, 2016, a Notice of Confirmation was issued by the Minister confirming that the resin and mandrel projects did not constitute SR & ED, as defined by section 248 of the *Income Tax Act* . (The " *Act* "), for the 2012 taxation year.

[21] No decision on the objection was made by the Minister for the 2013 taxation year, as the appellant preferred to rely on her right to appeal to this Court after the expiration of 90 days from service of The notice of objection without the Minister notifying the taxpayer of the fact that the taxpayer canceled or ratified the assessment or reassessed under paragraph 169 (1) *(b*) of the *Act* .

III. ISSUES

[22] At the hearing, the Respondent conceded that the resin was SR & ED within the meaning of section 248 of the *Act* for the 2012 and 2013 taxation years.

[23] Accordingly, the issues are as follows:

> Does the appellant's R & D activities for the 2012 and 2013 taxation years constitute SR & ED within the meaning of section 248 of the *Act* ?
> Are the appellant's research and development activities related to the development of a method / equipment for the installation of the Formadrain sheath by a single access instead of two accesses, the "T" mandrel , Constitute SR & ED within the meaning of section 248 of the *Act* ?

IV. PROOF AT THE HEARING

[24] Mr. Therrien has been employed by the appellant since 1994. He became a partner in 1999 and since September 30, 2016, he is the appellant's president. He succeeded Mr. Gérard Marc-Aurèle, the founder and former president of the appellant, who died in 2016.

[25] Mr. Therrien is a civil engineer. He testified about the research activities related to the development of the new lightweight chuck.

[26] Mr. Carl Marc-Aurèle is also employed by the appellant. He is Vice-President of the Appellant and is a Chemical Engineer. He testified about the development of the resin.

[27] The appellant was created in 1994 by Mr. Gérard Marc-Aurèle. Marcus Aurelius was not an engineer, but he had the soul of an inventor with an avant-garde vision. It was following an unfortunate personal experience that the latter had the idea in the 1980s to develop a system to repair sewers of residences and buildings without resorting to excavation.

[28] The idea of repairing sewers without excavation matures for ten years, before Marc-Aurèle decides in 1993 to associate with the engineering firm Deblois Engineering, Île d'Orléans.

[29] At that time, the "no excavation" system was already in use at the city level, but the idea of transposing this system to residential sewers was farfetched given the complexity of access to sewer and Changes in direction

and changes in the diameter of these ducts.

[30] Mr. Therrien indicated that as of 1994, the appellant's team has engaged in research and development to develop functional technology. It was no small task. In 1996-97, the technology was lame.

[30] However, gradually a manual containing the procedure was developed by the appellant in order to gain a better understanding of the terrain and to better control the wide range of uncontrollable elements attached to it. The witness gave as an example the infiltration of water and the dissipation of heat.

[32] However, it was only in 1998 that the appellant began to allow sewer repair contractors to use its technology through licensing throughout North America.

[33] The appellant is now a leader in the sewer repair industry without excavation. In addition, 36 licenses to use the technology developed by the appellant were awarded to entrepreneurs, including 6 in Quebec, 20 in the other provinces of Canada and 10 in the United States. [4]

[34] In 2012, the appellant had approximately 20 employees, including three engineers, and its turnover was in the order of $ 1.75 million.

A. The product

[35] The term "mandrel" designates the rubber tube which serves as a mold and which makes it possible to place the "Formadrain" sheath in the underground ducts.

[36] The appellant undertook the development and design of a mandrel that would be pushed in place rather than pulled, allowing for the installation of Formadrain technology in a single access rather than two [5] .

[37] The appellant wished to be able not only to repair underground ducts without digging, but to do so by accessing it only through "cleanout", that is to say by access to the ducts inside the building , Rather than by the streets, which are often busy and where the workspace is restricted.

[38] In addition, the appellant wished the mandrel to be as light as possible, so that it could be exported easily and for single use. Thus, no need for customers to return the mandrel after use.

[39] The process of installing the product that the appellant attempts to develop can be summarized in three main steps:

> First, the product already impregnated with resin, including the mandrel, is pushed into the sewer pipe.
>
> Secondly, a steam supply pipe is connected to the mandrel. The pressure in the chuck causes the repair to be inflated to the size of the old pipe and the heat hardens the resin so that it becomes perfectly solid.
>
> Third, once the sheath is baked, the mandrel is removed from the sewer and can be discarded [6] .

B. The tests

[40] To arrive at a result in a given project, Therrien estimates that on average about 20 tests per year are carried out in the workshop and about 20 tests are carried out in the field.

[41] The old version of the mandrel that was used by the appellant was made of reinforced rubber. It was flexible and adapted to the diameter of the ducts, once stretched. Incidentally, the chuck was heavy.

[42] To develop its new mandrel, the appellant had to find materials that met its criteria for mechanical heat resistance, lightness and cost, since it was intended for single use only. To this end, several steps were taken to find equipment that met these criteria.

> (1) 2012 project: development of a method / equipment to install the Formadrain duct by a single access instead of two accesses [7] .

[43] Trials conducted by the appellant during her 2012 tax year are recorded in her laboratory workbook, in a 62-page document submitted to the Court containing descriptions and photos. Mr. Therrien testified to the effect that the notes found there were always inscribed in a contemporary way.

[44] In 2012, the work was oriented towards the design of a mandrel:

- thinner;
- More flexible;
- lighter;

- Capable of resisting the stress caused by the installation of a sheath by push-in-place and by its extraction;
- Disposable, therefore at a lower cost than a reusable mandrel.

[45] Several tests were first made with a new nylon chuck, designed already full diameter, and that did not need stress to stretch.

[46] However, the deployment did not proceed uniformly throughout the trials. Some specific areas were not sheathed, and as a result they swelled prematurely and disproportionately.

[47] The appellant's team modified a number of parameters to counter the problems of sheath deployment due to breakage of the release agent. For example, it tried to change the swelling rate, use various types of lubricants to reduce friction, and coat the silicone chuck.

[48] For this purpose, the nylon mandrel has worked in the factory. The appellant then decided to conduct an "in situs" trial in the field. Therrien explained that the team is attempting to replicate field conditions in the field, however, it is very difficult to reproduce all the variables offered by the field trial. For the appellant, field trials are important and part of the experimental development. During these trials, only labor-related costs were billed to customers, including equipment and time required for installation.

[49] The experiment with the nylon chuck "in situs" proved to be a failure. The appellant had to resort to an excavation following this unsuccessful attempt. As part of the sheath had never been deployed, the appellant was unable to pull out the mandrel that had been pushed into the conduit [8] .

[50] Despite this failure, the appellant made another attempt on the ground on November 16, 2012. Although several parameters were changed and the mandrel was removed without problem, an incident with the sheath required a second excavation] .

[51] Mr. Therrien testified that these factory trials and "in situs" have created a technological advance. It is through these investigations and trials that the appellant has succeeded in developing a new chuck that she is currently using. The tests allowed the appellant to understand the inflation mechanism and it was impossible to develop a mandrel in which there was a diameter that was equal to that of the conduit.

[50] I must note that, according to Mr. Therrien's testimony, which was not contradicted, the appellant is the only company using the sheathing method,

the competitors using the inversion method. The appellant can not, therefore, resort to routine studies, techniques and procedures. The turnkey technology for sewerless repairs that the appellant wanted to develop did not exist in 2012 and 2013.

(2) Draft 2013: continuation of the 2012 project and new project on the development of a T-shaped mandrel [10]

[53] Following unsuccessful attempts in late 2012, the appellant resumed her research and development work by returning to the base to find equipment with specific components.

[54] The appellant was already using rubber, but armed rubber, which is heavy and expensive. The appellant's team agreed that it was better to proceed with the rubber. The rubber was already working for the appellant. However, it was necessary to develop a much thinner rubber, which could respond to mechanical stress and less expensive than reinforced rubber, since the ultimate objective was single use.

[55] As Therrien explained, thin rubber exists, however, in this case, the technological uncertainty was whether a thin rubber mandrel could withstand mechanical stress at insertion and extraction, if The rubber could mold different configurations, changes of direction up to 45 degrees and adapt to the heat. In addition, the rubber must have some resistance to tearing since the sewers to be repaired are not smooth, they are often very rusty and there may be roughnesses and tubers which are important. Thus, the required rubber was not on the market.

[56] The appellant hired Pro-Flex to produce the rubber tubes that would serve as its mandrels. Pro-Flex is an expert in the manufacture of rubber products.

[57] Although the appellant is a research and development specialist, and Dr. Carl Marc-Aurèle is a chemical engineer, the rubbers contain very complex chemical properties that exceeded the appellant's expertise.

[58] The mandate given to Pro-Flex was not simple, since the rubber tube in question had to be able to respond to an impressive amount of stresses, since the mandrel had to withstand multiple sources of stress during its installation.

[59] Pro-Flex first provided two types of rubber to the appellant: one based on SVR and one based on EPDM.

[60] The difficulty encountered in molding the EPDM-based mandrel was its ability to adapt to changes in pipe diameters.

[61] Typically, the sewers of 4-inch-diameter buildings are connected to the 6-inch diameter exterior sewers, hence the transition.

[62] In spite of several tests carried out by the appellant in the workshop with the prototypes of mandrels provided by Pro-Flex, these proved impossible to adapt to the different pipe diameters.

[63] In 2013, the appellant also initiated a project to develop equipment or a method of sealing the sewer from the building to the municipal sewer by simultaneously entering service entrances [11] .

[64] That said, this project was still in its infancy. It was further developed in the years 2014 and 2015.

[65] Mr. Therrien indicated that prior to commencing a research and development project, the appellant's engineers were still conducting research on the Internet to determine if a process was not already developed. For example, for choices of mandrel materials, the appellant's engineers consulted the material data sheets available on the Internet. They also used their experience to remove certain materials, knowing in advance that they would not be suitable for the application they wanted to make of them.

[66] The appellant, in the light of its expertise, was not involved in the chemical formulation of the rubber. Instead, Pro-Flex was responsible for finding the correct chemical formulation, based on the scales imposed by the appellant.

[67] All assumptions, iterations and test results were noted in the appellant's laboratory record. Mr. Therrien explained that the initial assumptions were made based on the overall goal of turnkey technology. The other assumptions were modulated according to the new technological uncertainties that emerged from the tests carried out. After the assumptions made by the appellant's team, the appellant's team was conducting tests. The results of these tests provided other technological uncertainties.

[68] The laboratory booklet shows that several tests had to be carried out with respect to the thickness of the material used for the mandrel. Rubber had to be thin and resistant to mechanical force, not break, but flexible to adapt to the different diameters of the sewer pipes. The mandrel had to be disposable so the costs had to be proportional to this unique use.

[69] Some of the other tests documented in the appellant's laboratory workbook were "intermediate tests", which serve more to collect data than to test specific assumptions. For example, on August 2, 2013, the appellant conducted an intermediate test to determine whether the mechanical bond of vulcanized rubber [12] to Oxford nylon could withstand the stresses imposed by the sheath curing [13].] .

[70] Whether in order to reduce production costs, have a process with fewer environmental impacts, or learn more about the behavior of certain materials under specific conditions, intermediate tests were an integral part of The appellant's search. It was these tests that enabled the appellant to develop the new technology it is currently using, namely the T-shaped mandrels.

[71] Mr. Therrien indicated that the appellant did not have a detailed plan in advance. However, research and testing were always done according to their overall objective. In addition, each individual trial was planned prior to its completion, but the trial series was not. The results obtained from each of these tests frequently led to other tests, which were impossible to predict. The appellant's objective was clear: to develop a single-use chuck capable of responding to mechanical stress (pressure, heat, mechanical deformation) both at insertion and at extraction and able to mold different configurations Sewers.

[72] The Respondent testified to Mr. Eduardo Turcott, the CRT assigned to the appellant's file.

[73] Mr. Turcott indicated that SR & ED had been denied because he considered that the information gathered did not enable him to determine whether the appellant's activities constituted SR & ED within the meaning of section 248 of the *Act* .

> MR. TURCOTT: My conclusion in the report is that I do not have enough evidence to say that there is no project, nor to say that there is a project. And that is called a non-corroborated decision. My conclusion is that I have not been able to pronounce myself, but I do not know what to say. A project.

[74] In addition, Mr. Turcott was of the opinion that there was no systematic investigation in this case. He testified that after hearing the appellant's evidence at the hearing, he still could not perceive a logical sequence in the trials.

[75] According to Mr. Turcott, the appellant demonstrated that it had

tested, but not why it was done, what variable it was modifying and what specific chemical formulas it used.

[76] In addition, Mr. Trucott noted that of the expenses claimed, $ 33,000 in 2012 was not an SR & ED expense. This expense had been made to pay the excavation expenses as a result of unsuccessful attempts with the nylon chuck. According to the respondent, this expense was not incurred for experimental development activities.

V. ANALYSIS OF THE LAW

[77] SR & ED is defined in subsection 248 (1) of the *Act* as follows:

> "Scientific research and experimental development" means a systematic investigation or research of a scientific or technological nature carried out by means of experimentation or analysis, that is to say:
>
> > *(A*) pure research, namely the work undertaken for the advancement of science without any practical application in view;
> >
> > *(B*) applied research, namely work undertaken for the advancement of science with practical application in view;
> >
> > *(C*) experimental development, namely work undertaken in the interests of technological progress with a view to the creation of new materials, devices, products or processes or even the slight improvement of existing ones.
>
> [...]
>
> Scientific research and experimental development activities do not include work relating to the following activities:
>
> > *(E*) market research and sales promotion;
> >
> > *(F*) quality control or testing of materials, devices, products or processes;
> >
> > *(G*) research in the social or human sciences;
> >
> > *(H*) prospecting, exploration and drilling for the discovery of minerals, oil or natural gas and their production;
> >
> > *(I*) the commercial production of a new or improved material, device or product and the commercial use of a new or improved process;
> >
> > *J*) style changes;
> >
> > *(K*) normal data collection.

[78] In this case, the appellant submits that its activities constitute experimental development under paragraph (*c*), while the respondent invokes the exclusions described in paragraphs (*f)* and *(i)* of that definition.

[79] In determining whether the activities undertaken by a taxpayer meet the definition of SR & ED activity set out in the *Act* , the following five questions must be answered in the affirmative:

1. Was there any scientific or technological uncertainty?
2. Have any specific assumptions made to reduce or eliminate this uncertainty been made?
3. Was the overall approach adopted consistent with a systematic investigation or research, including the formulation and verification of hypotheses through experimentation or analysis?
4. Was the overall approach taken to achieve scientific or technological advancement?
5. Was a record of the assumptions verified and the results maintained during the work?

[80] These five criteria were enacted in 1998 by Bowman CJ (as he then was), which relied on its interpretation of the concepts supported in 86-4R3 circular to make a decision in *Northwest Hydraulic Consultants Limited Her Majesty the Queen* ***[14]*** (hereinafter " *Northwest Hydraulic Consultants Ltd* "). In doing so, he established the approach known as "five questions", which was confirmed in the decisions *RIS-Christie* [15] and *CW Agencies* ***[16]*** .

[81] The circular 86-4R3, which was first replaced by the circular of 19 December 2012 and then by the circular of 24 April 2015, has always been regarded as "a useful and trustworthy guide" given that this policy was the result of extensive consultations between the government and the scientific community, both in industry and in universities.

[82] In order to determine whether the project for the appellant on the mandrel during the tax years 2012 and 2013 is an activity of SR & ED, it should analyze the five above-mentioned issues in light of the facts of this case .

(1) Was there a scientific or technological uncertainty ?

[83] The parties submitted opposing views on the question of whether there was a technological uncertainty over the tax years 2012 and 2013 on the project of the chuck.

[84] It is clear in the minds of the appellant that the multiple settings that came into play at the development of its "Chuck pushed single-use" did not constitute uncertainties that could be eliminated by current studies or by the usual procedures. This type chuck did not exist.

[85] The technological uncertainty was the fact that the chosen material must be thin, affordable and withstand mechanical stress to the insertion and extraction. In addition, the material must be flexible enough to mold configurations or changes in diameter and changes of direction up to 45 degrees and to adapt to the heat.

[86] In addition, the material must have a certain resistance to tearing as sewer repair are not smooth, they are often very rusty and it may be rough and tubers that are important. As M. Therrien has indicated, there is no doubt that the thin rubber existed on the market, but there was no thin rubber that can adapt to these constraints.

[87] The respondent, for its part, has given much importance to the fact that the appellant had used Pro-Flex for developing the chemical formula of rubber that was used to manufacture the mandrel.

[88] The respondent argues that the source of technological uncertainty of this project lay entirely in the chemical composition of the material, a task that was delegated to a rubber manufacturer.

[89] I have difficulty with the argument of the respondent because paragraph *d)* of the definition of research and development in subsection 248 (1) of the *Act* includes the development activities in Canada directly undertaken on behalf of the taxpayer.

[90] In addition, the Policy on expenditure on research contracts and December 2014 states that the development work carried out after a sub-contract on behalf of the performer are equally eligible only if they were led by the running itself.

[91] I am satisfied that the appellant has demonstrated that there was a technological uncertainty. In paragraph 16 of its decision in *Northwest Hydraulic Consultants Ltd* , Chief Justice Bowman has shown what he believes was a technological uncertainty:

> a) When we talk about "risk or [of] technological uncertainty" in this context, it implicitly suggests that there must be some uncertainty that can not be eliminated by routine engineering or routine procedures. I do not mean that as soon as a problem is detected, there may be some doubt about how it will be resolved. If the resolution of the problem is reasonably predictable using standard procedure or routine engineering, there is no technological uncertainty as that term is used in this context.
>
> b) What is "routine engineering"? It is this question (as well as that relating to technological progress) that seems to have divided the experts more than

any other. In summary, this relates to techniques, procedures and data that are generally available to competent specialists in the field.

[92] In the 2015 Policy states that:

> A scientific or technological uncertainty exists if the probability of reaching a goal or a particular result, or the way to do can not be known or determined from experience or scientific or technological knowledge generally available. More specifically, it is impossible to predict whether the objectives will be achieved, or what solutions (eg approaches, approaches, studies, equipment configurations, system architectures, circuit techniques, etc.) will achieve the objectives, from the basis of existing scientific or technological knowledge . [...]
>
> Technological uncertainties may arise from deficiencies or limitations in the current state of technology, which prevents the development of new or improved capability. In other words, the current state of technology may be insufficient to solve a problem that occurs in development.
>
> It is important to recognize that this issue is not simply to identify one does not know how to achieve goals. We must be able to specifically identify what is lacking in the basic scientific or technological knowledge and generates uncertainty.

[I underline.]

[93] In other words, it is necessary that the missing knowledge is really lacking in basic scientific or technological knowledge not only unknown to the applicant.

[94] In the decision of this Court or *Bees Packaging Inc. In Service* ***[17]*** , the Jorré judge said the following regarding the criterion of technological uncertainty:

> 142 [...] The first consideration, technological uncertainty, is an approach to the criterion of technological progress; it can hardly be a matter of technological progress if we already know how to get the result. [...]

[95] In this case, the factors and parameters to be checked by calling for the development of disposable mandrel were located both in the material composition of the mandrel at the level of the method allowing it to push up from a single access.

[96] It seems that the entire project reduce the relative appellant mandrel unique aspect of the search for the chemical formulation of the rubber is a simplistic view of work that has actually been made.

[97] The testimony of M. Therrien was not contradicted when he argued that the techniques known in the field and practiced in the building sewer repair industry all consist in using the method of inversion.

[98] That said, the new technique proposed by the appellant to the emergence of new constraints, which they could not be eliminated by routine engineering or routine procedures. Therefore, they are qualified technological uncertainties.

[99] The Respondent appears to argue that I have to analyze the project in silos, and each maneuver individually taken must result in a technological uncertainty. I do not agree with this approach.

[100] But it is precisely an aspect on which the judge ruled Jorré on the occasion of the case *Bees Conditioning Service Inc.* , which has rejected this view:

> 128 Finally, the 2009-02 project on print finishing was also uncertain. The fact that each of the separate components has the potential to achieve the desired objectives does not preclude that there is uncertainty as to the overall goal of all run together.
>
> 129 M. Gariépy insists he must look at the projects "at the highest level", that is to say he must look a whole project. Watching every little step would be to distort the project. It states that it is possible that a secondary objective does not represent uncertainty, which does not prevent the qualification of the project as a whole. Later in his testimony, M. Gariépy says that according to its interpretation of the guidelines of the Canada Revenue Agency, we must look at the project from the beginning, and not just for the tax year
>
> 135 M. Gariépy critical report M. Kooi, the expert for the respondent on the ground that it looked projects too close, rather than watching from the highest level.
>
> 152 I totally agree that it needs to be experimental development in the year. However, this does not result that we can not consider the history of a project that began in a previous year by examining the question whether, in the particular year in dispute, there has been development experimental within the meaning of the Act.
>
> 153 <u>Furthermore, one must consider each project globally in the year and not each test individually</u> .

[I underline.]

[101] In this case, it is clear that the appellant did not know initially how it would do to develop and install a disposable mandrel by pushing it inside a pipe. Seen as a whole, the project included the appellant multiple

technological uncertainties residing both in the chemical composition of the core, thickness and length, as mechanical stress that allowed it to be inserted and removed from the leads.

[102] Engineers working on the projects had several years of experience in the field of repair sewer without excavation. Considering the expertise and knowledge in this area, it is clear that the factory tests and "in situs" were made because of a real technological uncertainty.

(2) Are the assumptions specifically designed to reduce or eliminate this uncertainty were made ?

[103] The analysis of the second question is intrinsically linked to the first, since uncertainty is necessary for the formation of a hypothesis.

[104] Inside the laboratory notebook for the appellant and for each of the years at issue are found numerous assumptions, posed by the company's engineers prior to testing.

[105] On the occasion of the case *Northwest Hydraulic Consultants Ltd* and regarding the second criterion, Bowman Chief Justice stated in paragraph 16 of its decision:

> It is important to recognize that although a technological uncertainty must be defined at the start, determining new technological uncertainties as and as research progresses and the use of the scientific method, including intuition and creativity, ingenuity and sometimes discovering, recognizing and ending with new uncertainties, are part of the SR & ED.

[106] The evidence clearly demonstrated that this requirement was satisfied by the appellant.

(3) Is the overall approach was in line with a systematic investigation or research, including the formulation and testing of hypotheses by experiment or analysis ?

[107] The respondent argued that the appellant conducted his research by "trial and error", without that tests are ordered in a predetermined systematic plan.

[108] In the 2015 policy, this approach is described as follows:

> In this case, the objective is to solve a business problem rather than addressing the problem associated with the underlying technology that

> have caused this functional problem. The conclusion of each iteration of the approach by "trial and error" is merely "an option did not work." No other analysis of why it did not work in order to apply this finding in a larger context . [...] The process is progressing just one iteration to the next, without trying to understand or solve the problem associated with the underlying technology . Problem solving by "trial and error" is not an experiment or analysis in the context of a systematic investigation or search.
>
> [I underline.]

[109] It appears from the evidence that the appellant's engineers clearly trying to understand the problems associated with the underlying technology, analyzing them in the context of the final product they were trying to develop a turnkey product.

[110] Moreover, how to conduct the research for the "resin" part of the project and for the "Chuck" was essentially the same: the tests were described within the same laboratory notebook and structured in the same way.

[111] By consenting to judgment for the part of the resin on the project, the Respondent admitted that the overall approach taken by the appellant in the course of his research was consistent with the third criterion that is the investigative or systematic research.

[112] Thus, it would be inconsistent to draw a different conclusion for the portion related to the core as to appellant's research project to its taxation years 2012 and 2013.

(4) Does the comprehensive approach aimed to achieve a scientific or technological advancement ?

[113] Although the project of the relative chuck appellant has not led in 2013 to a technology that was used, the fact remains that the research allowed the appellant to advance its scientific and technological knowledge.

[114] In the 2015 policy, it is stated that:

> By demonstrating why a certain approach will fail or do not achieve the objectives, scientific or technological advancement is still possible. In some circumstances, the project objectives may not have been achieved, but during the process, the SR & ED was performed to understand the reasons for the failure. Thus, a scientific or technological advancement can be achieved even if the project objectives are not achieved.
>
> The rejection of a hypothesis is an advancement because it eliminates a

possible solution.

[115] At the end of 2012, the appellant made two field tests which were unsuccessful. However, research which it has engaged subsequently enabled him to understand the inflation mechanism and that it would be impossible to develop a mandrel in which there was already a diameter.

[116] In 2013, the technology was not yet developed, but it was better understood and better managed by the appellant. For example, the appellant returned to rubber after testing nylon and silicone. The appellant knew in light of the tests that rubber would work, since its current core work. However, the appellant had to use another rubber formulation being able to withstand the many constraints. This thin rubber required for proper operation of the chuck did not exist on the market. To this effect, a rubber formulation satisfying all the criteria developed by the appellant had not been developed. The tests were all unsuccessful.

[117] At the hearing, M. Therrien stated that the appellant had now succeeded in developing a lightweight core using a thin rubber can be used for certain repairs by pushing instead of pulling it. In addition, the chuck 'T' was also developed by the appellant.

(5) Is a register of verified hypotheses and results has been maintained during the work ?

[118] The Court [18] and the Federal Court of Appeal [19] seem to have consistently interpreted this fifth criterion to the effect that it is not mandatory that the evidence is documentary and testimonial evidence that may be presented . Although risks are associated with the failure to adequately document a process in a draft SR & ED, oral evidence is accepted.

[119] In this case, the appellant's lab notebook, or the complete record searches with photos, proves that the appellant made assumptions and used a systematic method for its taxation years 2012 and 2013 whose overall goal was to develop a key technology in hand, for the repair of sewers.

VI. EXCAVATION OF EXPENSES 33,000 $ - Tax Year 2012

[120] The respondent argues that the appellant can not claim an amount of $ 33,000 incurred following the two trials with nylon core that proved unsuccessful. According to the respondent, this expenditure was not incurred for experimental development activities.

[121] The appellant argued that this expenditure excavation is related testing related experimental development. According to her, without testing "in situs", this expense would not have been committed by the appellant.

[122] I believe that part of the expenses incurred related to the application of paragraph *c*) of subsection 2900 (2) of *the Income Tax Regulations* (the " *Regulations* ") as these expenses are directly related research and development undertaken by the appellant in his essays "in situs" for example, part of the excavation is related to the removal of the mandrel. However, I believe that the expenses incurred to repair the sewer using the traditional way do not fall within the application of subsection 2900 (2) of the *Regulation* , as these expenses are not directly related to research activities. At the hearing, the breakdown of this expenditure has not been made by the parties. Given the amount involved, I decided to give half the amount claimed is, 16 500 $ as expenses directly attributable to research and development activities for the year 2012. This approach is reasonable in my opinion, on the facts presented at the hearing on this matter.

VII. DISPOSITION

[123] Given that the respondent conceded that the research and development of the appellant as to the resin constitute SR & ED for tax years 2012 and 2013.

[124] Since I have concluded that the research and development of the appellant about the new chuck and chuck 'T', constitute SR & ED for tax years 2012 and 2103.

[125] Therefore, the call on the 2012 tax year is recognized in the amounts claimed for SR & ED of the resin and the mandrel, except that under my conclusion on excavation expenses of the about $ 33 000, an amount of $ 16,500 will not qualify as SR & ED.

[126] The call on the 2013 tax year is allowed.

[127] The appellant chose to proceed under the informal procedure. Therefore, pursuant to section 18.1 of the *Canada Act Tax Court,* reproduced below, disputed amounts can not be reduced by more than $ 25 000, per tax year.

> 18.1 The judgment upheld an appeal under subsection 18 (1) is deemed to include a statement that the total of all amounts involved will not be reduced by more than $ 25 000 or, as applicable, the amount the loss in question is not increased by more than $ 50 000.

Signed at Ottawa, Canada, this 15 th day of March, 2017.

"Johanne D'Auray"

Judge D'Auray

REFERENCE:	2017 ICC 42
No. THE COURT FILE:	2016-1657 (IT) I 2016-1658 (IT) I
STYLE OF CAUSE:	FORMADRAIN INC. HER MAJESTY THE QUEEN
PLACE OF HEARING:	Montreal, Quebec)
DATE OF HEARING:	On 8 and 9 December 2016
REASONS FOR JUDGMENT:	The Honorable Judge Johanne D'Auray
DATE OF JUDGMENT:	On March 15, 2017

APPEARANCES:

Representative of the appellant:	Yves Hamelin
Counsel for the Respondent:	M e Gabriel Girouard

LAWYER REGISTERED BACK TO:

For the appellant:

Your Name:	
Cabinet:	
For the Respondent e:	William F. Pentney Deputy Attorney General of Canada Ottawa, Canada

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[1] Video Formadrain viewed at the hearing.

[2] Developed in England in the 1970s and patented in 1975 - Review Report of the SR & ED, December 11, 2013, page 4 (Exhibit I-1, Tab 1, page 4).

[3] The mandrel is a tube which serves as a mold and allows to introduce the sheath into Formadrain underground conduits. For purposes of clarification, in 2012, costs related to the project which included part-resin and the chuck portion, represented

an amount of $ 91,904, as in Exhibit A-1, Tab 6, page 4. in 2013, the c osts related to the continuity of the 2012 draft represented an amount of $ 34,587, while costs related to the new project on the mandrel "T" represented an amount of $ 2 840, as appears Exhibit A-1, tab 13, page 5. (Transcripts, volume 1, p. 88-89).

[4] Report of examination of the SR & Exhibit I-1, Tab 1, page 4.

[5] Although no evidence has been made on this subject by the appellant's representative, the latter argued that the techniques known in the field and practiced in the industry all involve pulling chucks (Transcripts volume II, p. 177).

[6] Information drawn from product presentation video Formadrain contained on the USB key (Exhibit A-2).

[7] The laboratory notebook appellant for 2012 is at tab 8 of Exhibit A-1. Part 2 of the project relative to the chuck begins on page 49.

[8] See Exhibit A-1, Tab 8, p. 67.

[9] See Exhibit A-1, Tab 6, p. 71 and pp. 67 and 68.

[10] The appellant laboratory notebook for 2013 is at tab 14 of Exhibit A-1. Part 2 of the project relative to the chuck begins on page 16.

[11] See Exhibit A-1, Tab 13, pages 5 and 8.

[12] The witness has defined "vulcanized" as meaning a pressure cooking with steam in an autoclave. (Transcript, volume 1, p. 131, lines 12-13).

[13] See Exhibit A-1, tab 14, page 18.

[14] *Northwest Hydraulic Consultants Ltd.* v *R* 1998 CarswellNat 3632, [1998] 3 CTC 2520, 98 DTC 1839, [1998] TCJ No. 340 (Tax Court of Canada).

[15] *RIS-Christie v The Queen* , [1999] 1 CTC 132, 99 DTC 5087.

[16] *CW Agencies Inc* v *The Queen* , 2001 FCA 393, [2002] 1 CTC 212, 2002 DTC 2740.

[17] *Bees Packaging Inc. In Service* c *R* , 2014 CarswellNat 4174, 2014 ICC 313, 2014 DTC 1219 (Fr), 2014 TCC 313, 2015 DTC 1140 (Eng).

[18] *Zeuter Development Corp.* v *R* , 2006 CCI 597 (Tax Court of Canada [Informal Procedure]), Par.28.

[19] *RIS-Christie Ltd v R* 1998 FCJ No. 1890 (Federal Court of Appeal), par.14-15.